

## PATENT COOPERATION TREATY

## PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT  
(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference AH 2628/031/PCT	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)
International application No. PCT/EP 03/07303	International filing date (day/month/year) 08.07.2003	Priority date (day/month/year) 12.07.2002
International Patent Classification (IPC) or both national classification and IPC C07D209/48		
Applicant SOLVAY SOLEXIS S.P.A. et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 2 sheets.

## 3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand  23.12.2003	Date of completion of this report  29.10.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Gregoire, A  Telephone No. +49 89 2399-2994 

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/EP 03/07303**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-16, 18-23, 25 as originally filed  
17, 24 received on 25.03.2004 with letter of 24.03.2004

**Claims, Numbers**

1-28 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/EP 03/07303**

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 1(part), 3-28(part)

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for the said claims Nos. 1(part), 3-28(part)

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the Standard.

☐ the computer readable form has not been furnished or does not comply with the Standard.

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)

Yes: Claims 2, 4(part), 13-27(part)

No: Claims 1(part), 3(part), 5-12(part), 28(part)

Inventive step (IS)

Yes: Claims 2, 4(part), 13-27(part)

No: Claims 1(part), 3(part), 5-12(part), 28(part)

Industrial applicability (IA)

Yes: Claims 1(part), 2, 3-28(part)

No: Claims

2. Citations and explanations

see separate sheet

**Re Item III**

**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

As indicated in the international search report, only claims which have been completely searched, namely claims 1(part), 2, 3-28(part) relating to the specific compound PAP (ε- phthalimido-peroxyhexanoic acid), are concerned by the following examination report.

**Re Item V**

**Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1) Reference is made to the following documents :**

- D1: EP-A-0 780 374 (AUSIMONT SPA) 25 June 1997 (1997-06-25) cited in the application
- D2: FEEDER, N. ET AL: 'Four.omega.-phthalimidoaliphatic peracids' ACTA CRYSTALLOGRAPHICA, SECTION C: CRYSTAL STRUCTURE COMMUNICATIONS (1996), C52(6), 1516-1520 , XP009018676

**2) Novelty (Art. 33 (1) and (2) PCT) :**

The specific alpha crystalline form of ε-phthalimido-peroxyhexanoic acid as characterised in claim 2 is not disclosed in the above mentioned documents. The applicant has shown in the application and further with the data sent with the letter dated 25.03.2004 that the alpha form obtained differs from the beta-form reported in the art. Claim 2, 4(part), 13-27(part) comply with Art. 33(2) PCT.

Claim 3(part) can not be considered as novel since it relates to the beta form which is clearly known from the prior art. The formulation of this claim as a product by a process claim is not allowable (see Guideline C, III, 4.7b). Claims 1(part), 5-12(part) and 28(part) can similarly not be considered as novel since they relate either to the known beta form or known uses thereof.

**3) Inventive Step (Art. 33 (1) and (3) PCT) :**

The technical problem underlying the present application is the provision of ε-phthalimido-peroxyhexanoic acid in a physical form such to assure an improved

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/EP 03/07303

bleaching efficacy and allowing its use at temperature of 10°C-30°C in detergency and disinfection.

D1 focuses on a process for reducing water and polar impurities in imidoalkynpercarboxylic acids and D2 discloses crystallographic data of  $\epsilon$ -phthalimido-peroxyhexanoic acid. No indication is present in these documents regarding different physical forms of  $\epsilon$ -phthalimido-peroxyhexanoic acid which could be used in order to solve the above-mentioned problem. In the light of the arguments of the letter dated 24.03.2004 and the comparative tests of the specification showing that the alpha-form has clear advantages over the known beta-form of the prior art, claims 2 and 13-27(part) can be considered to fulfill the requirements of Art. 33(3) PCT. This is however not the case of claims 1(part), 3(part), 5-12(part) and 28(part) relating to the known beta-form.

AH 2628/031/PCT

cuum, at about residual 10 mmHg, at a temperature not higher than 20°C. The specimen, weighing about 70 g of crystalline PAP is characterized by the X Ray Diffraction and Surface Infrared Spectroscopy (IR/S) techniques. The obtained spectra identify the alpha form.

X Rays: typical peaks at 17.5 and 19.0 and typical quadruplet at 24.2 - 25.0 [ $^{\circ}2\theta$ ].

IR/S: typical peak with maximum absorption in the 1707-1712  $\text{cm}^{-1}$  zone (anhydrous crystals: absorption at 3450-3500 lower than 5%).

EXAMPLE 1B (comparative)

PAP preparation of beta crystalline form (crystalline form of the prior art) by mass-crystallization

By initially operating according to the procedure of Example 1A, the melted organic phase formed by the PAP eutectic with water is fed to a beaker containing water at the temperature of about 40°C, and kept under stirring with a magnetic stirrer and a magnetic anchor. After the melt solidification, the solid separation from the liquid, the granular product is dried with the same method described to remove the residual water in Example 1A. Also this specimen is characterized by the X Ray Diffraction and the Surface Infrared Spectroscopy techniques. The obtained spectra identify the beta form. X Rays: typical peaks at 18.0 and 18.7 and no typical quadruplet at 24.2 - 25.0 [ $^{\circ}2\theta$ ].

IR/S: typical peak with maximum absorption in the 1699-1704  $\text{cm}^{-1}$  zone (anhydrous crystals: absorption at 3450-3500 lower than 5%).

EXAMPLE ~~1C~~ (comparative)

Example 1B has been repeated but by using water cooled at 15°C. The results are equal to those obtained in Example 1B.

EXAMPLE 2A

PAP preparation of beta microcrystalline form starting from PAP of alpha crystalline form

Table 1

<p style="text-align: center;"><del>4A</del> <sup>4B</sup></p> <p>Examples 4A comp. and <del>5A</del>: comparison between the results (white degree) obtained in the washing tests using mixtures containing HD detergent, or respectively LD, and compositions formed by (% by weight): 2.5% of non ionic surfactant, 0.10% HEDP, and respectively the % of xanthan rubber and 10% of PAP of the type as indicated in the Table</p>		
	Ex. 4A Comp	Ex. <del>5A</del> <sup>4B</sup>
PAP and xanthan rubber in the composition		
- PAP	beta	alpha
- xanthan rubber (% by weight)	0.5	0.1
Washing tests Composition + HD surfactant White degree:		
- art. 114 (red wine)	70	71
- art. 167 (tea)	67.5	69.5
- art. 164 (grass)	63	63
Washing tests Composition + LD surfactant White degree:		
- art. 114 (red wine)	72	73
- art. 167 (tea)	73	73.5
- art. 164 (grass)	64.5	65.5